

How (L. B.) b.m. - 15-  
With the authors regards. L.B.  
Dentalist

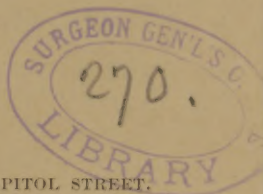
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LIGATION  
OF THE  
COMMON CAROTID.  
  
EXSECTION  
OF THE  
INFERIOR DENTAL NERVE.

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By LYMAN B. HOW, M. D.,  
PROFESSOR OF ANATOMY AND PHYSIOLOGY AT DARTMOUTH COLLEGE.

FROM PROCEEDINGS OF N. H. MEDICAL SOCIETY.

CONCORD, N. H.:  
EVANS AND SLEEPER, PRINTERS, CAPITOL STREET.  
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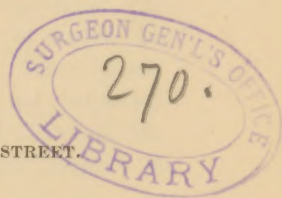
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## LIGATION OF THE COMMON CAROTID. EXSECTION OF THE INFERIOR DENTAL NERVE.

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BY LYMAN B. HOW, M. D., PROFESSOR OF ANATOMY AT DARTMOUTH  
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The two surgical operations I am to briefly report are of so rare a kind, and one of them so unique, that a sense of duty to those laborious and too often unappreciated members of the profession, known as the compilers of statistics, impels me to put them on record.

Charles P., aged 33, a robust man, on the evening of April 26, 1880, was engaged in removing sand from a newly erected baker's oven (he being entirely inside it) when the oven, covered with a bank of sand twenty inches thick, caved in and he was buried alive. In about ten minutes he was extracted, and I found him stretched on the ground, wildly delirious. Chloroform was at once administered to keep him quiet and allow an examination. He was found to have received a fracture of his left thigh, near the junction of the upper and middle thirds, attended with a good deal of laceration of the muscles, and there was a large and rapidly increasing tumor on his head, involving the right eyelids, forehead and temple, evidently due to subcutaneous hemorrhage, the source of which was incomprehensible till some one arrived who could give me the history of the injured man, which is as follows: At the age of eighteen months a small tumor appeared under the upper lid. At the age of ten it was as large as a cranberry bean. By the time he was eighteen the pressure had destroyed the sight. When he was twenty-one some sort of an operation was attempted, but abandoned on account of hemorrhage. After this it extended all around the orbit, involving both lids, and soon the forehead and temple. It

was growing slowly, but painlessly, up to the time of the accident, extending four inches above the orbit and from near the median line of the forehead to the front of the ear, measuring full five inches in its transverse diameter,—all the arteries around the orbit and those of the temporal region being involved in it, and it projected considerably above the surrounding parts,—the eyelids, especially, being very prominent. The disfigurement was great, and he reminded me of the Cyclops Polyphemus, after his eye had been put out by Ulysses, a "*Monstrum horrendum . . . . cui lumen ademptum.*"

This cirroid aneurism of the orbit and face had got ruptured by the falling bricks, and the blood was being rapidly diffused under the skin. Ice and compression were tried, but in vain, although for a few hours they seemed to be successful. It was hoped that the accumulating pressure, aided by cold, might arrest the bleeding, but it soon increased and the blood made its way all over the head, beneath the scalp, and was extending down the neck. Then the overstretched skin began to turn very dark. The upper eyelid was enormously distended, and its pulsations could be seen at a distance of ten feet. The ear was almost black, and it was evident that the integument would soon give way. I invited Drs. C. F. Bonney, William A. Webster, O. D. Abbott, Leonard French, L. Melville French, and Marcel Richard to meet in consultation. They all agreed that nothing but ligature of the common carotid would be likely to avail anything. Accordingly, ether having been administered, the operation was at once performed,—the gentlemen above mentioned kindly assisting.

The usual incision was made, and the sheath opened on the inner side only enough to bring the artery distinctly into view at the point where the vessel was to be tied, the aneurism needle was passed behind the artery from without inward and the ligature was tied just above the omo-hyoid muscle, the carotid having been first carefully examined to ascertain that it did not bifurcate at a lower point than usual, and that it had no anomalous branches. The sheath was opened on the inner side, to obviate the risk of wounding the jugular vein and cutting across the descendens noni nerve. The ligature was of ordinary saddler's silk, doubled and waxed.

The only antiseptic precautions were to have clean instruments and fingers ; to use new, thoroughly cleansed sponges ; to wash out the wound clean with a weak solution of carbolic acid ; to dip the ligature, also, in it, and to apply to the incision after the sutures were put in, several layers of carbolized gauze. The dressings were not disturbed for four days.

On the seventh day my entrance into the patient's room awoke him from a dreamy sleep, whereupon he clutched his neck and tore open the wound. Instantly the blood ran so freely across his neck that I thought he must have pulled open his carotid. I applied pressure, and this proving effectual, it was evident that the blood came from the superficial descending branch of the superior thyroid, which artery alone had required a ligature during the operation. This artery had apparently enlarged after the operation, and when he pulled the ligature off the blood flowed freely from it and from the congested capillaries of the wound. This delayed the healing of the incision, and there was after this a quite profuse suppuration. The ligature came away on the twenty-seventh day spontaneously, having remained about ten days longer than in the average of reported cases. It might, perhaps, have been removed sooner, but the pulsation of the arteries at the root of the neck were so strong that I was glad to have it remain as long as it did.

As soon as the carotid was tied a free incision was made through the integument in the temporal region, and enough blood and clots removed to relieve the distension, care being taken not to disturb the clots near the orbit, lest there should be secondary hemorrhage through the large orbital vessels when the collateral circulation was established.

A drainage tube was introduced as soon as the discharge from the incision in the temporal region began to be offensive, and carbolized water was frequently injected for a month, when the discharge ceased. The very dark color of the external ear and upper lid, and indeed of the whole integument of the right side of the head, deepened to a black after the operation, and in another day a very suggestive greenish hue was added to the blackness of the ear, which made us apprehensive that he would loose it. It was sponged frequently with warm carbolized water, and the whole region kept well covered with cotton. With the establishment of



the collateral circulation the natural color was gradually restored, and there was no sloughing of the integument. The head and shoulders were kept in an elevated position to allow the venous blood to escape readily from the head,—the “vis a tergo” being weak,—a position the patient insisted on keeping for five weeks afterward, to prevent headache. He had no so-called “cerebral symptoms.”

As soon as the carotid was tied the pulsation of the upper lid was arrested, but in an hour it began anew and in another hour was quite distinct. An artery of considerable size was found running from the left angular artery across to the right and to the orbit. This was compressed digitally by my students for several hours. The pulsation of the lids gradually diminished and is not now discernible.

There now (September) remains in front of the right ear a tumor about a third as large as an egg, composed of loose integument containing, apparently, a mass of impervious blood vessels, and the loose skin around the orbit has under it a thin layer of the same tissue. But this has been slowly and steadily diminishing, and the originator of this novel but highly successful method of getting rid of a large cirroid aneurism has the satisfaction of finding both his personal appearance and prospect for a long life both greatly increased.

According to Dr. John Wyeth, in his prize essay on the Surgical Anatomy and History of the Carotid Arteries, published in the proceedings of the American Medical Association for 1878, the common carotid has been tied fifty-two times for the cure of non-malignant tumors of the orbit, with a result of forty-six recoveries and six deaths,—a mortality of eleven and one half per cent. Of the forty-six recoveries, twenty-eight are returned as cured, five as improved, and six as not improved.

Ligation of the common carotid has been performed by the following surgeons of New Hampshire: Muzzey, ligation of both carotids; successful. Twitchell, in 1807, ligation of right carotid for gun-shot wound of neck and face; successful. T. R. Crosby, in 1864, for gun-shot wound through left temporal bone; successful, although on account of secondary hemorrhage he tied the artery again.



As the mortality after this operation, for all causes, is, according to Dr. Wyeth, forty-one per cent, the record of our New Hampshire surgeons, though brief, is a fortunate one.

## II.

The next report is, in this State, of a rarer operation,—excision of the inferior dental nerve for intractable neuralgia.

J. H., a healthy farmer, sixty years of age, began to suffer from neuralgic pain in the right half of his lower jaw in August, 1868. It was not severe at first, but by the following March he was unable to work. September 18th, he came to Manchester, and although he had been already well saturated with drugs, more of them were tried for nearly one month, during which time he grew steadily worse. Dr. C. F. Bonney also saw him, and when the anti-neuralgic remedies of modern therapeutics had proved unavailing, concurred with me in recommending surgical treatment.

His symptoms corresponded exactly to those of Trousseau's Epileptiform Neuralgia. After a short interval of rest, all at once, like electric shocks, flashes of intense pain would shoot through his jaw, his features would be hideously distorted by epileptiform contractions of the facial muscles, tears would stream from his eyes, and his agonizing cries would pierce the hardest heart. These lightning-like stabs of pain would succeed each other rapidly for a short time, and then would come an interval of heavenly repose which would sometimes last several hours if he was well drugged with morphia and atropia. But during this bivouac the fiends of pain were all the time industriously loading up their artillery, and ere long a volley all along the line would be the only notice that the truce was ended, the poor victim seizing his jaw, falling on his knees and shrieking for the mercy that was only perhaps after an hour reluctantly yielded. The pain extended the whole length of the inferior dental nerve and streamed out through the mental foramen to the integument of the chin. There were no sensitive places to be found on the jaw and no reflex cause operating from the system at large could be discovered. It was possible, perhaps probable, that the cause was centric, but we recommended an operation with the belief that even a brief respite from such pain was worth all the risk.

He joyfully took the chance, and Oct. 10, 1879, assisted by Drs. C. F. Bonney, J. W. Mooar and L. Melville French, I operated as follows: An incision was made behind the ramus and below the body of the jaw so that the resulting cicatrix might be as far as possible concealed. The line of incision behind the ramus extended through the integument only down to the parotid gland, which was then turned back a little and a flap, including the masseter muscle, was dissected up. The periosteum was turned to either side from a central incision and a trephine applied to the ramus, with its point opposite the entrance to the inferior dental canal. The facial artery and vein being next drawn forward the trephine was next applied to the body of the jaw. The external table of the jaw, between the two openings, was removed with bone chisels, so that the nerve and its canal could be examined. Nothing abnormal could be detected, but two inches of it were removed and the proximal end was stretched. The accompanying artery having been wounded by a slipping of the point of the trephine, it was tied at the point where it entered the canal.

The wound was sponged out clean with carbolized water, new sponges only being used, as is my custom, the periosteum and soft parts were replaced with extreme care, and the whole covered with carbolized gauze, which was not disturbed for five days. There was not, during the whole aftertreatment, a half an ounce of discharge of any sort from the wound. The neuralgic pain ceased at once, no opiates were required after the second day, and a rapid convalescence ensued. Mr. H. soon returned to his farm and resumed work, and now, although nine months have elapsed, he has not had a twinge of pain.

Excisions of the first and second divisions of the fifth pair of nerves, even when Meckel's ganglion has been removed, have not fulfilled the confident expectations that were formed a few years ago,—the pain having returned a few months afterward, in several of them. Out of thirteen cases tabulated by Prof. P. S. Conner, the pain is known to have recurred in seven. In one of the seven in one month, in one within two months, in one in three months, in one in eight months, in another in sixteen months, and in one at a time unknown. Among the six other cases, we learn that one was exempt from pain for several years, one for several months,

one for fourteen months, one for two months, one for twenty-eight days, and in one the result is given as dubious.

Operations on the inferior dental nerve were formerly unsuccessful, because they were sometimes merely sections at the mental foramen, or excisions of short portions of the nerve, not enough of the nerve having been removed to prevent reunion of the severed ends. But later operations, in which more of the nerve has been exsected, have been more encouraging.

The perfect relief that has been procured in this case, even should it last no longer than the nine months past, has, I believe, fully justified the operation.











